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An Evaluation of Shoshone Sculpin (*Cottus greenei*) Populations on northern portions of the Ritter Estate, Gooding County, Idaho

Report to The Nature Conservancy
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by

J.S. Griffith
Department of Biological Sciences Idaho State University
Pocatello, Idaho

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Sampling was conducted on portions of the Ritter Estate recently by The Nature Conservancy in Gooding County to determine the presence of populations of Shoshone sculpin, Cottus greenei. This sampling was a continuation of sampling that was conducted during the period of 1984-1986. The purposes of the 1987 sampling were to determine if Shoshone sculpin were present on northern portions of the Ritter Estate that had not previously been surveyed, and, if so, to estimate approximate population sizes.

Three sites were sampled on 1 November 1987. The first was the mouth of Minnie Miller Springs (Figure 1). A gasoline engine-powered backpack shocker producing 170 volts DC pulsed electricity proved to give the best results. At this site, no quantitative sampling was possible because of the presence of large boulders and water depths great enough to preclude complete recovery of sculpin that were electroshocked. Water temperatures were 15 C in the springs and also 15 C in the channel at the mouth of the springs. Three hours of sampling resulted in the collection of only 33 sculpin from the mouth of Minnie Miller Springs, giving an indication that population density is low. Slightly more than half (17) of the sculpin collected were Shoshone sculpin. These fish were adults and ranged from 72-86 mm total length. The largest of these was larger than any Shoshone sculpin that had been previously captured on the Ritter Estate property. The remaining 16 sculpin were mottled sculpin, Cottus bairdi. They ranged in length from 105-131 mm. It is possible that some of the sculpin may have been hybrids between Cottus bairdi and Cottus greenei. In addition, juvenile sculpin approximately 15 mm in length were collected in areas of dense growths of watercress between the main and secondary spring inflows. No quantitative estimates were made of the number of these juvenile fish nor was it determined which species were present, but densities were low. An effort

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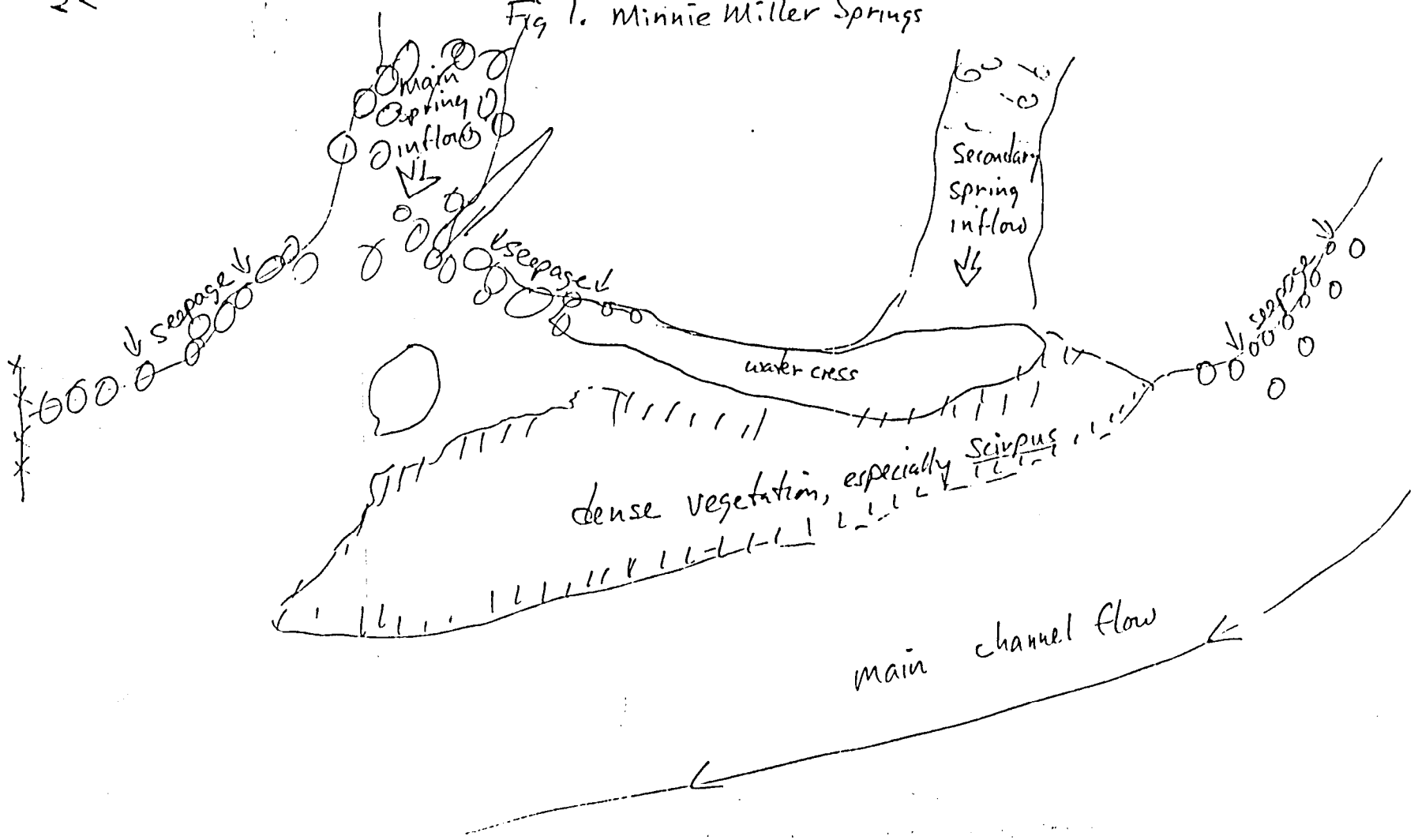
Fig 1. Minnie Miller Springs



was made in the secondary spring inflow to determine how far upstream the sculpin were present. A few sculpin were collected approximately 10 m from the mouth of the spring at an elevation of about 2 m above the water surface elevation at the spring mouth. Also present in Minnie Miller Springs were wild and hatchery rainbow trout (Salmo __airdneri) about 10-20 cm in length, and a few longnosed dace (Rhinichthys cataractae) under boulders in the current. Schools of redside shiners (Richardsonius balteatus) were spawning along the boulders near the main spring inflow.

The second site sampled was a spring channel adjacent to the trout hatchery on the extreme northeast corner of The Nature Conservancy property. The spring channel extends for about 150 m before it is joined by the outflow of **a** commercial trout hatchery and cascades several hundred feet down the canyon wall and into the Snake River. The upper 150 m was sampled using a frame net to sample for density estimates. The frame was 1 m square and was enclosed with fine mesh netting on four sides but had an open top and bottom. The frame was placed randomly, and immediately after the frame was in place a current_ from the backpack shocker was applied to the area enclosed. .The shocker was then removed and the substrate and vegetation within the frame were visibily inspected for sculpin. Water temperature was 15 C.

Numbers of sculpin collected are shown in Table 1. All sculpin present were Shoshone sculpin. The best habitat was a small area of cobble in the center upstream portion of the spring channel. In the middle and lower portions of the channel poor habitat was present, with' little cover in the form of gravel and sand, and densities were lower here. Habitat in the lower end of the channel was dense boulders where the placement of frame nets was not possible. A density of 0.5 sculpin per m^2 was estimated from shocking a portion of that area. The overall population size is

Table 1. Numbers of adult Shoshone sculpin collected in frame nets in spring channel adjacent to trout hatchery on northeast corner of Ritter Estate, 1 November 1987.

Habitat	Number of frames	area, m^2	Number of sculpin/m	Estimated number present
cobble,moderate velocity	4	48	7.8	390
gravel, sand embedded	4	1650	0.8	1320
boulder		1200	0.5[1]	600

[1] estimated from electroshocking without frame nets

approximately 2,000 fish for this area. The fish collected were adult fish that ranged in size from 34 to 71 mm. Some juvenile sculpin were collected along the edges of the channel in the shallow water heavily choked with aquatic vegetation but these were not counted.

A limited amount of sampling was also conducted on a smaller spring channel immediately to the south of the channel just described. A few small sections of this channel in the vicinity of a dilapitated wooden footbridge were checked, but sampling was limited due to the impenetrable vegetation. A few Shoshone sculpin were the only fish collected.